

than one half are reported as colored, either in one or in both the companions. A catalogue of 36 stars are reported in the forthcoming number of the *American Journal of Science and Art*, for July, by MARIA MITCHELL, and selected for the measurements of distances and angles of position; 30 of these are colored in both the companions, 5 were observed in weather unfavorable for observations of color, and of the remaining one nothing is said. There is a rich mine of information in observations on the colors and on the changes of colors in the stars.

Descriptive Enumeration of a collection of FISHES from the Western Coast of Central America, Presented to the Smithsonian Institution, by Capt. John M. Dow.

BY THEODORE GILL.

Captain John M. Dow having recently forwarded a small collection of Fishes and other animals to the Smithsonian Institution, attention was arrested by the interesting nature of some of the species, and it has been deemed advisable to publish descriptions of them as well as all the other new species. Only five had been previously described; twenty-two of them are new and several represent new generic types. Many of the species are closely related to West Indian species.

Family GERROIDÆ Bleeker.

Genus DIAPTERUS Ranz., Gill.

*Eucinostomus Baird and Girard.*

DIAPTERUS DOWII Gill.

The greatest height is contained  $3\frac{1}{2}$  times in the extreme length; the head  $4\frac{1}{4}$  times; the diameter of the eye  $2\frac{3}{4}$  in the head; the snout equals 4-5ths of the eye. The profile is rectilinear and the interorbital space nearly flat, but convex above the eyes, and nearly as wide as the eye. The maxillary groove is linear and extends backwards to a vertical midway between the front of the orbit and pupil, while the scales on each side extends to the vertical from the front of the orbits. The exposed surface of the supramaxillary bones is at first triangular and thence oblong, the whole  $2\frac{1}{2}$  times as long as wide.

The height of the constricted portion of the caudal peduncle equals two-thirds of its length and the diameter of the eye. The lateral line is scarcely bent behind. The second and third dorsal spines are slender, and nearly equal half the height of the body beneath; the last is little more than half as long as the first branched ray. The third anal spine is as long as the snout and longer, but more slender, than the second.

D. IX. 10. A. III. 7. C. 4. I. 8. 7. I. 3. P. 1. 14.

5  
Scales 47—

10

The color is silvery; the spinous dorsal blackish at margin; the axilla of pectoral blackish.

Three specimens were obtained along the coast. I dedicate the species to the excellent collector, Capt. Dow.

Family CHÆTODONTOIDÆ (Cuv.)

Genus POMACANTHODES Gill.

POMACANTHODES ZONIPECTUS Gill. Proc. Ac. Nat. Sci. Pa., 1862, p. 244.

A single specimen in the collection, between three and four inches long, ex-

[June,

hibits a pattern of coloration analogous to that stage of the *Chaetodon parv* called *Pomacanthus quinquecinctus*. The dorsal filament is rudimentary.

Family *PERCOIDÆ* (Cuv.)

Genus *CENTROPOMUS* Lac.

*CENTROPOMUS ARMATUS* Gill.

The greatest height is contained  $3\frac{2}{3}$  times in the length to the *fork* of the caudal fin. The head enters  $2\frac{2}{3}$  times in the same, and twice in the length to the vertical behind dorsal and anal fins. The distance from the subopercular flap to the preoperculum equals that of the latter from the hinder nostril. The diameter of the eye nearly equals a sixth of the head's length. The dorsal spines are very robust, and the second rather exceeds half the height of the body. The second anal spine is exceedingly developed, reaches to the vertical from the base of the caudal fin, and equals the interval between the snout and hinder preopercular spines. The first dorsal, pectoral and ventral fins when depressed terminate at nearly the same vertical, and slightly in advance of the anus.

D. VIII. I. 10. A. III. 6. C. VI. 1. 8. 7. 1. IV. P. 1. 14. V. I. 5.

7  
Scales 51—  
14

The color is yellowish-brown above, tinged with silvery beneath. The dorsal fins are more or less blackish; the soft rays yellowish. The other fins are also yellowish; the anal blackish between the second and third spines, and with the second reddish. The lateral line is brownish.

A very distinct species. Compared with the species of Cuba and the West Indies, most nearly the *C. ensiferus* of Poey. The single specimen described is about eleven inches long.

Genus *EPINEPHELUS* (Bloch) Gill.

*EPINEPHELUS ANALOGUS* Gill.

The height is contained  $3\frac{3}{4}$  times in the total length, of which the head forms a third. The preoperculum is delicately pectinated behind, and towards the angle armed with three stronger teeth. The diameter of the eye equals a sixth of the head's length, and equals the interorbital space as well as the snout behind the intermaxillars. The third, fourth and fifth spines are equal, and contained twice in the head in front of the upper preopercular angle; the tenth is contained  $2\frac{1}{2}$  times. The caudal fin enters  $5\frac{1}{2}$  times in the length; the height of the dorsal  $2\frac{3}{4}$  in the head; the anal is deeper; its third spine is longest, and enters  $4\frac{1}{2}$  times in the head's length; the pectoral is half as long as the head; the ventral shorter, but coterminous with it. There are about 96 rows of scales inclining more or less forwards and downwards; above the lateral line in front are about fourteen longitudinal rows.

D. X. 17. A. III. 8. C. 5. 8. 7. 4. P. 1. 18. V. I. 5.

The color is purplish-gray, with numerous dark spots about as large as the pupil; those of the pectoral and caudal fins are smaller and more crowded; of the dorsal, anal and ventral, more like those of the body. The pectorals have a narrow white margin.

One specimen, nearly fourteen inches long, is in the collection.

Subfamily *RHYPTICINÆ* Gill.

Of this subfamily, three genera are now known and are represented by nine species.

1. *Rhypticus saponaceus* C. and V. iii. 63.
2. " *arenatus* C. and V. iii. 65, pl. xlv.

1863.]

3. *Rhypticus subbifrenatus* Gill, Proc. A. N. S. 1861, 53.
4. " *xanti* Gill, op. c., 1862, 250.
5. " *maculatus* Gill, op. c., 1862, 251.
6. *Promicropterus maculatus* = *R. maculatus* Holb., S. C., 39, pl. vi. f. 2.
7. " *nigripinnis* = *R. nigripinnis* Gill, Proc. A. N. S. 1861, 53.
8. " *decoratus* Gill, 1863.
9. *Smecticus bicolor* Val., Venus, Poissons, p. 307 (pl. ii. f. 2.)

## Genus PROMICROPTERUS Gill.

This genus is distinguished from *Rhypticus* by the presence of only two dorsalspines.

## PROMICROPTERUS DECORATUS Gill.

The greatest height of the body is rather less than a quarter of the total length; the head, inclusive of the membranous prolongation of the operculum, forms a third of the length to the base of caudal, while the latter equals the area of the head behind the eye. The diameter of the eye is contained  $5\frac{1}{2}$  times in the head's length, and equals the snout. The interorbital region is convex and equals half the eye's diameter. The height of the caudal peduncle equals the interval between the chin (front of the lower jaw) and eye, and the length that between preorbital and eye. The band of palatine teeth is quite broad. The dorsal and anal fins extend backwards as far as the base of caudal; the pectoral equals the distance of the opercular spine from the eye, and is twice as long as the ventral.

D. II. 26. A. 16.

The color is brownish, irregularly maculated with white spots about as large as the pupil, and generally with a blackish centre; the spots are sometimes confluent, and most numerous on the side of the body and the opercula.

This species is closely related to *P. nigripinnis*, but differs slightly in proportions and color, and the greater width of the palatine bands of teeth.

A single specimen, eight inches long, is in the collection.

## Family SCLENOIDÆ (Cuv.) Günther.

## Genus BAIRDIELLA Gill, 1861.

## BAIRDIELLA ARMATA Gill.

The height equals a fourth of the total length, of which the head forms a fourth. The caudal fin equals the head behind the front margin of the eye. The diameter of the eye enters  $4\frac{1}{2}$  times in the head's length, somewhat exceeds the interorbital area, which is scarcely convex, and equals the snout. The fourth dorsal spine is longest and nearly equals half the head's length; all are stout and robust. The second dorsal commences nearly above the 20th scale of lateral line, or tip of pectoral. The second anal spine is very strong, longer than the first ray and nearly equals the interval between the front of orbit and opercular flap; the soft fin behind is incurved. The pectoral equals the interval between the middle of the pupil, and the opercular flap and the ventral, that between the front of the pupil and the same.

D. X. 1. 23. A. II. 8. C. II. 1. 8. 7. 1. II. P. I. 1. 15. V. I. 5.

7 4

Scales 51—

10 4

\* The color is hoary above, silvery below; the fins yellowish; the vertical, especially the first dorsal, clouded with darker.

One specimen, about eight inches long; notwithstanding the development of the anal spine and form of the fin, it appears to be a true *Bairdiella*.

## Genus OPHIOSCION Gill.

This genus is distinguished from *Bairdiella*, by the form of the head, which

[June,

is oblong, constricted at the nape, thick and tumid, and with a high projecting tumid snout. The mouth is small and entirely inferior, the periphery semi-oval, and the supramaxillary almost entirely concealed. The preoperculum is armed with small spines radiating from the angle, and with none directed vertically downwards.

From *Rhinoscion*, it is additionally distinguished by the large scales.

A more distinct idea of the physiognomy of the genus may be obtained, if it is stated that I was immediately reminded on seeing it of the Siluroid genus *Bagrichthys* of Bleeker.

#### OPHIOSCION TYPICUS Gill,

The height equals a quarter of the total length. The head enters rather more than  $4\frac{1}{2}$  times in the same. The caudal equals the interval between the posterior nostril and opercular flap (?) and is rhomboid. The snout equals the diameter of the eye, and enters  $4\frac{1}{2}$  times in the head's length; the interorbital region is little convex, and is held  $3\frac{1}{2}$  times in the same. The supramaxillary bone scarcely extends to the vertical from the centre of the eye, and when retracted, only the inferior projection of the angle is visible. The third dorsal spine is the longest, and equals half the distance between the snout and the middle of the base of the pectoral. The second anal spine is very robust, but not longer than the third dorsal; the margin of the fin behind is convex. The pectoral fin equals the interval between the snout and the upper angle of the preoperculum; the ventral is somewhat longer, the outer branch of the first ray being prolonged.

D. X. I. 23. A. II. 7. C. IV. 1. 8. 7. 1. III. P. I. 1. 14. V. I. 5.

5

Scales 49—

10

The lateral line is subangulated at about the twentieth scale and above the great anal spine.

The color is greenish-gray above, yellowish-silvery below. The fins are yellowish; the unpaired one more or less clouded with grayish.

One specimen, eight inches long, is in the collection.

#### Genus AMBLYSCION Gill.

This genus differs from *Larimus* by the nearly rectilinear profile, slightly depressed between the eyes, the almost or quite vertical cleft of the mouth, and the uniserial teeth of the jaws. The symphysis of the upper jaw is edentulous and emarginated; the lower jaw is deeper at the symphysis. The other external characters are those of *Larimus*.

#### AMBLYSCION ARGENTEUS Gill.

The greatest height enters  $3\frac{2}{3}$  times in the total length; the head equal the height. The caudal enters  $6\frac{1}{2}$  times in the same. The snout is rather less than the eye; the latter enters 5 times in the length of the head. The interorbital area equals the eye's diameter. The height of the caudal peduncle is a half greater than the eye. The pectoral fins extend to the vertical from the third articulated ray of the second dorsal. The anal fin begins under the twentieth and ends under the sixteenth rays of the second dorsal.

D. X. I. 29. A. II. 6. C. II. 1. 8. 7. 1. I. P. 1. 14. V. I. 5.

The color is silvery, hoary above.

One specimen, about thirteen inches long.

#### Family CARANGOIDÆ.

#### Genus CARANX (Comm.) Gill.

Gnathanodon Bleeker.

1863.]

## CARANX PANAMENSIS Gill.

The height scarcely exceeds a third of the total length. The head enters  $4\frac{1}{3}$  times in the same. The diameter of the eye, within the membrane, equals a fifth of the head's length and half of the snout. The jaws are even; the supramaxillary extends to the vertical from the front of the pupil. The second dorsal spine is longest, and scarcely exceeds a third of the head's length. The pectoral is rather longer than the head, and extends to the vertical of the sixth or seventh anal ray. The ventral enters  $2\frac{1}{2}$  times in the head.

D. VII. 1. 19. A. II. 1. 16. P. I. 1. 19. V. I. 5.

Plates 1. 1. 18.

The color is silvery, with six moderately broad brown bands, between which intervene six narrower ones. The first passes over the eye. In the adult they are obsolete. The fins are yellowish; the pectoral with a black axillar spot.

One specimen nearly ten inches long was sent; another is in a former collection of Capt. Dow. The species is extremely nearly allied to the *C. speciosus* Lac., of the Eastern Seas.

## Genus CARANGOIDES Bleeker.

## CARANGOIDES DORSALIS Gill.

The body is angulated at the origin of the second dorsal and anal fins, where the height equals a half of the length to the fork of the caudal. The eye's diameter enters  $3\frac{1}{2}$  times in the length of the head, and the snout  $2\frac{2}{3}$  times. The supramaxillary reaches to the vertical from the front of the pupil. The height of the suborbital, above the middle of the cleft of the mouth, equals about a quarter of the head's length. The first articulated rays of the second dorsal and anal fins are exceedingly long, equalling the interval between the snout and the root of the caudal. The pectoral fin reaches to the root of the second dorsal. The ventral equals the snout.

D. VII. (?) 1. 18. A. II. 1. 15. P. I. 1. 16. V. I. 5.

Plates 44 p. m.

The color is silvery, steel-blue above. The fins are yellowish; the dorsal clouded with black between the last rays.

Two specimens.

## Genus CARANGUS (Girard) Gill.

## Caranx Bleeker.

## CARANGUS MARGINATUS Gill.

The height enters about 3 times in the length to the fork of the caudal, and  $3\frac{1}{2}$  times in the total; the head forms a fourth of the length. The lower jaw is even with the profile. The supramaxillary terminates at the vertical from between the pupil and hinder border of orbit. The eye has a thin membranous eyelid behind, extending nearly to the pupil; the diameter enters  $3\frac{2}{3}$  times in the head's length and equals the snout. The breast is scaly. The pectoral is longer than the head. The ventral extends half way to the interval between its base, and the first soft anal ray. The lateral line is bent under the seventh ray of the second dorsal, and thence armed with moderate shields.

D. VIII. 1. 19. A. II. 1. 15. P. I. 1. 18. V. I. 5.

Plates 29.

The color above is greenish-yellow, and below silvery-yellow. There is a black scapular spot, and the second dorsal and caudal are margined with black. The other fins are yellowish.

One specimen, about ten inches long, was received.

## Genus OLIGOPLITES Gill.

## OLIGOPLITES INORNATUS Gill.

The height enters  $4\frac{2}{3}$  times in the total length; the length of the head  $5\frac{2}{3}$

[June,



times. The upper maxillary reaches nearly to the vertical from the hinder margin of the orbit; the *intermaxillary* enters  $2\frac{1}{2}$  times in the head's length. The snout is a little longer than the diameter of the eye; the latter equals a quarter of the head's length. The infraorbital bones do not extend to the preoperculum; the one above the maxillary bones is wider than the one above itself and as wide as that behind the eye. The opercular apparatus is vertical in front of the pectoral and for an equal space above. The preoperculum is nearly vertical and its angle obliquely rounded. The width of the operculum and suboperculum in front of the lower axilla of the pectoral equals the diameter of the eye and the interval between suboperculum and axil. The pectoral equals the interval between its axis and the hinder border of the pupil; the ventral is rather shorter but its end almost or quite reaches to the anus.

D. V. I. 20. (= 9 + 11.) A. II. I. 20. (= 12 + 8.) C. 5. 1. 8. 7. 1. 4 P. 2. 14. V. I. 5.

The color is uniform, tinged with blue above.

One adult specimen is in the collection. It is very closely related to the *O. occidentalis*, (*Chorinemus occidentalis* C. & V.) of the Caribbean Sea but the intermaxillar is shorter, the suboperculum wider and more convex below, the opercular apparatus more truncated behind, and the anus and anal fin placed farther forwards.

The Western fishes referred to the genus *Chorinemus* by Cuvier and Valenciennes do not appear to be congeneric with the Eastern and African species, but rather constitute a peculiar genus distinguished by the fewer (4—5) dorsal spines. The names of *Scomberoides* Lac., *Orcynus* Raf., *Chorinemus* Cuv. and *Porthmeus* C. et V., (young) have been applied primarily or wholly to the extra-American species and cannot be retained for the American type. The *Chorinemus occidentalis*, C., *guaribira* C. et V., *C. saliens* C. et V. and *C. palometa* Cuv. et Val., are the known species.

#### Family EXOCETOIDÆ Bon.

#### Genus EXOCETUS Art.

#### EXOCETUS DOWII Gill.

The greatest height is contained  $5\frac{1}{2}$  times in the length to the fork of the caudal, while the head forms little more than a fifth of the same length. The width of the forehead equals  $\frac{5}{8}$  of the head's length; the diameter of the eye a third. The scale in the middle of the forehead is transversely oblong and the distance between its sides and the orbits about half as great as its width. The four granulated areas in front are of small size; the one behind larger and with a smaller one on each adjoining lateral scale. The preoperculum is rectangular. The pectoral fin extends to the base of the caudal; the ventral fin is inserted nearly midway between the operculum and base of caudal and extends about as far as the last anal ray bent backwards.

D. 12. A. 12. C. 4. 1. 6. 8. 1. 6.

9

Scales 50—

2

The dorsal commences over the twenty-eighth scale from the scapular region and ends over the thirty-ninth.

The pectoral fins are fuliginous, with light inferior border continued on the lower rays. The ventrals are fuliginous, except on the base, inner ray and distal margin. The caudal also fuliginous. The dorsal and anal are colorless.

One specimen nearly thirteen inches long is in the collection.

Dedicated to the naturalist-collector, Captain Dow.

#### EXOCETUS ALBIDACTYLUS Gill.

The greatest height is contained nearly 6 times in the length to the fork of  
1863.]

the caudal. The head enters  $4\frac{1}{2}$  times in the length. The width of the forehead exceeds a third of the head's length, while the diameter of the eye is less than a third. The scale in the centre of the forehead is nearly square and nearly equal to the distance between its sides and the orbits. The four granulated areas in front are of considerable extent and behind the area is transverse and confluent. The preoperculum is slightly produced at its angle. The pectoral fin extends nearly to the base of the caudal; the ventral is inserted midway between the operculum and the axilla of the anal fin, and extends to about the middle of the base of the latter.

D. 14. A. 10. P. 16.

9  
Scales 45—  
2

The dorsal commences over the twenty-fifth scale from the scapular region and ends over the thirty-eighth.

The color of the pectoral fins is deep blue, with the uppermost branch of each ray white. The ventral is immaculate, except at the axil and a faint spot about its centre. The caudal is deep blue. The dorsal is also blue between its fifth or sixth and last rays; the anal immaculate.

One specimen eleven inches long is in the collection.

#### Family *MULLOIDÆ*.

Genus *UPENEUS* (Cuv.) Bleeker.

*UPENEUS GRANDISQUAMIS* Gill.

The greatest height is contained 4 times in the length to the end of the median caudal rays, and  $4\frac{1}{2}$  times in the total. The head equals the height, and is itself longer than high; the profile in front of the eyes rapidly declines downwards, and is nearly rectilinear. The diameter of the eye enters  $3\frac{1}{2}$  times in the head's length, and the height of the preorbital  $2\frac{3}{4}$  times. The supra-maxillar ends at the vertical from the front of the eye. The teeth in *front* of the upper jaw are biserial; below uniserial. The first dorsal fin is highest at the third spine, and there equals the head in front of the preopercular margin; the first is exceedingly short, and the second and fourth nearly equal and little shorter than the third; all the spines are very slender towards the ends. The distance of the second from the first dorsal enters  $1\frac{2}{3}$  times in the base of the former and in that interval are three scales; its length is less than that of the first. The ventral equals the distance of the hinder margin of the orbit from the snout.

The tubes of the lateral line have slender branches diverging from them, generally directed obliquely upwards. The larger scales have six radiating striæ.

1 1  
D. VIII. I. 7—. A. I. 5—. C. V. I. 7. G. I. IV. P. I. 1. 14. V. I. 5.  
1 1

Scales 29 (+ 2); transverse line  $\frac{1}{2}$  2 | 1 | 5.

The color is light greenish-brown above, with an indistinct silvery spot at the centre of each scale. Below the lateral line, especially between it and the anal fin, the color is rose. The dorsal fins covered with spots of the color of the back. The others are immaculate.

Two specimens, the longest of which is seven inches and a half long, are in the collection.

#### Family *POLYNEMATOIDÆ* Bleeker.

Genus *TRICHIDION* (Klein).

*TRICHIDION OPERCULARIS* Gill.

The greatest height equals a fourth of the length to the fork of the caudal

[June,

fin, and more than a fifth of the extreme, while the head enters  $4\frac{1}{2}$  times in the latter. The outline from the dorsal to the snout is nearly rectilinear and little declined. The distance of the anal from the outer axil of the ventral equals that of the posterior nostril from the margin of operculum. The first dorsal, when bent backwards, rests on the fourth scale, in front of the second. The second commences nearly above the twentieth scale of the lateral line. The pectoral is as long as the head behind the pupil. There are eight pectoral filaments, the longest of which extends rather beyond the front of the second dorsal.

D. VIII. 1. 12. A. II. 13. P. I. 1. 13.

8  
Scales 69—70—  
14

The color is greenish-brown above and yellowish-green below. The operculum is blackish. The first dorsal and the pectorals, except below, are also blackish, as is likewise the margin of the caudal. The anal is tinged with orange.

A single specimen, eleven inches long, is in the collection.

TRICHIDION APPROXIMANS Gill ex. L. and B.

One specimen.

Family MUGILOIDÆ.

Genus MUGIL (Linn).

From this genus, I would exclude the *Mugil proboscideus* of Günther and the *M. corsula* of H. Buchanan. The former is the type of a genus which may be called *Chenomugil*, and distinguished by the longitudinal cleft of the mouth, the narrow and pointed lower jaw and the thick and angular upper lip. Two species are known to me. To the *Mugil corsula* can be given the new generic designation of *Rhinomugil corsula*; it is distinguished by the projecting rounded snout and the lateral position of the nostrils.

MUGIL GUENTHERII Gill.

The height enters  $5\frac{1}{2}$  times in the total length; the head 5 times; the caudal  $4\frac{1}{2}$ , and its median rays  $7\frac{2}{3}$ . The interorbital space and snout are little convex transversely; the eye has a posterior membrane covering the iris and hind part of pupil, and an anterior covering the iris; the diameter equals a fifth of the head's length, and is less than the snout. The lips are rather thin. A deep groove is in front of the vomer. The upper labial teeth are very conspicuous. The snout, which is longer than the eye, does not project beyond the mouth. The preorbital is narrowed and obliquely rounded behind, leaving a narrow line of the maxillary exposed. The dorsal fins are nearly equal in height, and contained twice in the head's length; the second as long as high; the origin of the first is nearer the snout than the base of the caudal fin, and above the twelfth scale; the second above the twenty-fourth scale of the lateral line. The pectoral fin is contained  $1\frac{1}{2}$  times in the length of the head and extends to the eleventh scale of the lateral line. The tip of the ventral is half way between its base and the anus. The anal is longer and higher than the second dorsal and longer than high; it commences in advance of the second dorsal. All the fins are scaleless.

D. IV. 1. 8. A. III. 9.

Scales l. 1. 38. Longitudinal rows 13.

The base of the pectoral is blackish. One specimen about ten inches long.

To Dr. Günther we are indebted for the better elucidation of the numerous species of *Mugil*.



Family *BATRACHOIDÆ* Sw.Genus *BATRACHOIDES* Lac.

The family of Batrachoids is capable of the following division :

- A. Dorsal spines three; opercular spines two.
1. Body naked. Palatal teeth uniserial..... Batrachus.
  2. Body naked. Palatal teeth villiform..... Halophryne\*.
  3. Body scaly. Palatal teeth uniserial..... Batrachoides.†
- B. Dorsal with two spines; operculum with one.
1. Canine teeth none..... Thalassophryne.
  2. Canine teeth on vomer..... Porichthys.

*BATRACHOIDES PACIFICI* Gill.

*Batrachus pacifici* Günther, iii. 173.

One specimen is in the collection, and differs from those described by Günther in the uniform coloration and the larger number of rays. (D. III. 27. A. 23.)

Family *GOBIOIDÆ* (Cuv.)Genus *DORMITATOR* Gill.*DORMITATOR MICROPHthalmus* Gill.

The greatest height is contained  $3\frac{2}{3}$  times in the total length and equals the length of the head. The eye is small,—the diameter equalling only a quarter of the interorbital area, and little more than an eighth of the head's length. The maxillary ceases in front of the vertical of the eye. There are three preopercular pores. The caudal is little longer than the interval between the front of the orbit and the opercular lobe. The dorsal bent backwards reaches to the base of the caudal. The pectoral is little shorter than the caudal. There are thirteen rows of scales between the origins of the second dorsal and anal fins.

D. VII. I. 8. A. I. 9. P. 1. 15.

Scales of lateral line 33.

The color is blackish, with light spots at the junctions of the scales, especially on the caudal portion. On the shoulder is a diffused black spot. A black band extends from the eye to the angle of the mouth. The dorsal fins are transversely spotted with darker, and the others clouded, the pectorals above being clear.

A single specimen, nearly a foot long, is in the collection.

The *Eleotris latifrons* of Richardson, from the Pacific, is referred, after autopsy, to *Dormitator maculatus*, (*Eleotris maculata* Günther ex Bloch) by Günther, which has only "nine or ten series of scales between the origin of the second dorsal and the anal," the diameter of the eye "not quite one-third of the interorbital space," and a less elevated body.

Genus *LEPTARIUS* Gill.

This new generic type is established for a representative of the *Arii* of Bleeker, having six fleshy barbels, the band of teeth on the palate, behind the maxillary band, quadripartite; the head granulated and without lateral fontanelles, the teeth of the dorsal spine before and behind directed downwards; with five branchiostegal rays, a slender body, and a very slender caudal peduncle, the anal fin rather low and oblong, the thin, adipose fin extending behind the anal, and the fins little developed.

This genus is closely related to *Hexanematichthys* (Bleeker), but is distinguished by the characters italicized in the foregoing diagnosis.

\* Type, *Halophryne Diemensis* = *Batrachoides Diemensis* Les.

† *Batrachoides Surinamensis* ex Bloch.

Among the *Arii*, with six barbels, there are apparently, thirteen generic types,—*Galeichthys* Val., *Hexanematichthys* Bleeker, *Leptarius* Gill, *Guiritinga* Bleeker, *Cephalocassis* Bleeker, *Hemiaris* Bleeker, *Ariopsis* Gill, *Notarius* Gill, (= *Arius* Bleeker, 1862, nec 1858), *Netuma* Bleeker, *Ariodes* M. T., *Sciaedes* M. T., *Arius* Val., Bleeker, 1859 (*Pseudarius* Bleeker, 1862,) and *Genidens* Cast.

Bleeker, in his first systematic revision of the Siluroids, restricted the name *Arius* to the genus of which the *Arius arius* Val. is the type, and, although it might have been advisable to have retained it for the first group, as he subsequently did, it must now be preserved with the limits assigned in 1859. His genus *Arius*, of 1862, comprises two distinct types, one with the buckler oblong, represented by the *Arius grandicassis*, which may be called *Notarius*, and the other with the buckler transverse, already named *Ariopsis*.

## LEPTARIUS DOWII Gill.

Extreme length ( $5\frac{3}{4}$ inches).....	100
Body.—Greatest height.....	10
Height at ventrals.....	8
Height of tail behind anal fin.....	$5\frac{1}{2}$
Least height of tail.....	5
Length of tail.....	17
Head.—Greatest length.....	19
Distance from snout to nape.....	
Greatest width.....	$13\frac{1}{2}$
Width of interorbital area.....	$5\frac{1}{2}$
Length of snout.....	6
Length of maxillary barbels.....	30
Length of outer chin barbels.....	12
Length of inner chin barbels.....	10
Orbit.—Diameter.....	$3\frac{1}{2}$
Dorsal.—Distance from snout .....	25
Length of spine.....	$7\frac{1}{2}$
Greatest height.....	$7+x$
Length of base.....	7
Anal.—Distant from snout.....	55
Length.....	13
Height at longest ray.....	$7\frac{1}{2}$
Caudal.—Length.....	13
Length of middle rays.....	6
Pectoral.—Length .....	$11\frac{1}{2}$
Length of spine.....	10
Ventral.—Distance from snout.....	42
Length.....	7

## Genus SCIADES Müll. and Troschel.

## SCIADES TROSCHELI Gill.

The greatest height is contained about  $4\frac{1}{2}$  times in the length to the base of the caudal fin, and  $5\frac{1}{2}$  times in the total. The caudal peduncle, behind the anal, equals the interval between the snout and the eye, and its least height that between the centre of the anterior nostril and eye. The head in front and on the sides is smooth, and a smooth, oblong triangular area extends nearly to the vertical from the upper angle of the preoperculum; a triangular area on each side is incurved externally to the narrow anterior extremity, and covered with white pisiform granulations. The dorsal buckler is a pentagon, with a semi-circular excavation behind and with its surface rugose. The head enters three times in the length before the end of the anal fin and more than four times in the total; its width equals the interval between the snout and upper angle of preoperculum, and the interocular area equals half the head's length. 1863.]

The eye is elliptical, and its diameter is contained  $6\frac{1}{2}$  times in the head's length. The distance of the posterior nostril from it equals a diameter. The maxillary barbels extend to about the middle of the pectoral; the outer mental to its base, and the inner mental are two-thirds as long as the outer.

There are three villiform patches on the palate which are almost contiguous, and together describe arch in front; the median patch is small, rather transverse and widest towards the front; the outer are oblong, subtriangular. The band of the upper jaw is nearly uniform and quite wide; the lower, interrupted at the symphysis, is nearly half as wide as the upper, and is narrowed towards its ends.

The dorsal spine enters  $1\frac{1}{2}$  times in the head's length, has in front, first, minute teeth pointed downwards, and then a row of small pisiform tubercles; teeth pointed downwards on its hinder border. The first ray is little higher than the spine. The anal commences at a distance from the snout  $3\frac{2}{3}$  times as great as that from the base of the caudal fin; its length enters  $6\frac{2}{3}$  in the length, exclusive of the caudal, and when bent back, it reaches to the supernumerary caudal rays; the greatest height nearly equals the length. The pectoral fins extend rather beyond the base of the dorsal and exceed a fifth of the length, exclusive of the caudal; the spine equals that of the dorsal. The ventrals are inserted midway between the base of the pectoral spines and the axil of the anal, and extend to the origin of the anal.

D. I. 7. A. 16. C. 11. I. 6. 7. I. 11.

The fins are almost blackish.

A single specimen is in the collection.

#### Genus AELURICHTHYS B. and G.

*Pimelodus Bleeker*, nec Cuv. et al ex Lac.

#### AELURICHTHYS PANAMENSIS Gill.

The greatest height is contained 5 times in the length to the base of the caudal fin, and  $6\frac{1}{2}$  times in the total. The height of the caudal peduncle equals half the interorbital area, and is half its length behind the anal fin. The smooth head enters 4 times in the length to the middle of the central caudal rays, and nearly 5 times in the total.

The width of the head enters  $1\frac{1}{2}$  times in its length, and the width of the interorbital area  $1\frac{2}{3}$ . The eye is elliptical; its diameter equals a fourth of the head's length, and the distance from the anterior nostril is equal to it. The maxillary barbels extend backwards nearly to the anus, and the mental to the bases of the pectoral fins.

The dorsal buckler is rather longer than wide, with its anterior margin concealed and its lateral and posterior very conspicuous, rounded towards the posterior angles and emarginated behind; the sides slope and form a rectangle, and the surface is filled with deep oblong pits.

The anal fin is situated midway between, or scarcely in advance of, the central point between the bases of the pectoral and caudal fins; it is oblong and equals or nearly equals the width of the head. The pectoral filaments extend about to the middle of the anal fin; the ventrals are inserted midway between the lower jaw and base of caudal, and extend backwards to the anus, entering  $2\frac{1}{2}$  times in the head's length.

D. I. 7. A. 27. C. 13. I. 7. 6. I. 12. P. I. 13. V. 6.

The color above is plumbeous; the pectorals thickly dotted with black on their inner faces; and the anal less so.

One specimen eight inches long is in the collection.

#### Family LEPIDOSTEOIDÆ.

Genus ATRACTOSTEUS Girard ex Raf.

#### ATRACTOSTEUS TROPICUS Gill.

The height is contained  $8\frac{1}{2}$  times in the extreme length, and is nearly a half

[June,

greater than the thickness. The head forms scarcely less than a fourth of the same. The snout equals the distance of the margin of the fifth scale of the lateral line from the front of the eye. The breadth of the head at the occiput equals half the length of the snout; at the eyes, little more than a third and behind the nostrils, it enters  $5\frac{1}{2}$  times in the same. The diameter of the eye equals a sixth of the snout's length. The operculum is nearly as high as long, subangulated behind, convex below at the anterior third, and thence advancing upwards towards the posterior margin. The ventral fins are nearer the snout than the margin of the caudal, the latter extending about a third of its own length beyond.

D. (III.) 7. A. (III.) 8. C. (IX<sub>2</sub>) 6+6. (IX<sub>2</sub>) P. (I.) 13. V. (III.) 6.

8

—  
Scales 52+ (at ventral between median dorsal and abdominal rows.)

—  
12

The scales are nearly smooth; in front deeper than long and obliquely convex below; behind oblong rhombic and with rectilinear margins. Forty-five scales precede the dorsal fin; the ventrals are behind the sixteenth oblique row; the anal behind the thirty-fifth and ending with the forty-first. Seven rows of scales intervene between the lateral line and ventral fins.

The color is glaucous above the lateral line and yellowish beneath. A spot in front of the caudal above the lateral line; others are on the forty-fifth and forty-seventh rows of scales below the lateral line, and obscure ones on the base of the caudal.

This species is, for American Zoologists and Palæontologists, the most interesting fish of Capt. Dow's fine collection. It is by far the most southern continental representative of the family that has been yet made known,—the "*Lepisosteus robolo*" of Lacépède, founded on the *Esox chilensis* of Molina, not belonging to this family. The only other species hitherto discovered beyond the boundaries of the United States or Northern Mexico is a Cuban species of the same genus, the *Atractosteus tristæchus*, *Esox tristæchus* of Schneider and *Lepidosteus manjuari* of Poey. The present species is distinguished by the form of the operculum, its proportions and the large size of the scales. A single specimen, nearly sixteen inches long, was obtained by Capt. Dow.

Family TRYGNONIDÆ.

Genus UROTRYGON Gill.

UROTRYGON MUNDUS Gill.

The disk is orbicular with a slight linguiform projection in front and with the pectoral fins behind broadly rounded. The distance of the snout from the hinder margin of the pectorals equals the width of the disk. The tail (behind the anus) is rather longer than the body (in front). The spine is inserted behind the middle of the tail, and is about as long as the distance between the snout and the nostrils. The ventral fins extend outwards, the rectilinear anterior margin tending little backwards, and the external margins are on a line with and complete the outline of the disk. The posterior margin in the male is nearly rectilinear, while in the female it is slightly convex, especially towards the inner angles. The upper velum is very sinuous and fimbriated. The teeth are pointed and pyramidal. The spiracles are oval, interrupted at the intero-anterior angle by the eyes, and the margins are entire and well defined. The skin is beset with numerous small stelliform tubercles, larger on the dorsal region. The color is a uniform dark-brown above.

Two small specimens, male and female, are in the collection.

The present species would, by many zoologists, be referred to the genus *Urolophus* of Müller and Henle, but it would appear that it and the *U. torpedinus* 1863.]

should be separated from that genus and referred to a distinct one, distinguished by the rounded and not angular outline, the longer tail and posterior insertion of the spine, and especially the acute teeth.

**Enumeration of the Fish described and figured by Parra, scientifically named by Felipe Poey.**

Antonio Parra was born in Portugal, and I believe resided in Havana for a long time, where he was probably naturalized, for he dedicates his work to the King of Spain, and sent the objects he described to the Museum of Natural History of Madrid. He printed in this last city, in 1799, at the printing office of the Viuda de Ibarra, a pamphlet in 8vo. entitled: *Discurso sobre los medios de conaturalizar y propagar en Espana los Cedros de la Habana y otros arboles, asi de construccion como de Maderas curiosas y frutales*. At page 21 is "an account of the different trees of the Island of Cuba, which contains 267 species and 20 Palms," and at page 30 a "notice of some kinds of hard wood which are in the Island, their colors, the localities where they are found and their uses." The author describes them in popular terms only.

The first important work of Parra is the one printed at Havana in 1787, at the printing office of the Capitanía General, in square 8vo., under the title *Descripcion de diferentes piezas de Historia Natural, las mas del ramo maritimo, representadas en setenta y cinco laminas*. This number of plates includes two of ornamental stands and two of a negro suffering from a greatly developed hernia. In some copies there is a second title, engraved, containing the words *Peces y Crustaceos de la Isla de Cuba*.<sup>\*</sup> It contains 40 plates of Fishes, representing 71 species, of which 3 belong to Florida; there are 17 plates of crustacea, the rest representing turtles, zoophytes and minerals.

The figures were probably drawn by the son of Antonio Parra; he also engraved them and colored some of the copies. The edition has long since been exhausted. One copy is in the library of the Economic Society, another is owned by M. Domingo de Arozarena, and M. Leonardo del Monte has the third. All the objects figured, including the negro with the hernia, are deposited in the Museum of Madrid, and have been of help in settling some serious doubts by the assistance of the present director of the Museum, M. Mariano de la Paz Graells.†

The work cites no authors, contains no classification, no scientific terms, and the names are all popular ones. It is easily seen that Parra has studied no books except the great book of nature; by his own natural gifts he has succeeded in describing and figuring objects as correctly as his contemporaries, and even surpasses Bloch in the exactness of his figures. Cuvier says, "it is one of the most useful works in the study of the fishes of the Gulf of Mexico, not only on account of the text, but also on account of the very exact figures representing them."

Parra does not omit describing the teeth of the jaws, the asperities of the scales, nor even the spinous rays of the dorsal fin and the furrow in which they can be hidden. He dwells more especially on the number and the peculiarities of the fins, and he cannot be reproached for omitting in his descriptions details that are shown in his figures. He observed, very properly, that the colors are less important than the rest of the organism, for he only treats of them last. To be sure he neglects the palatine teeth, the spines of the operculum, the denticulations of the preoperculum, the exact number of the spinous and soft rays, but this is not surprising in one who preceded Cuvier and Valenciennes,

<sup>\*</sup>My copy has an engraved frontispiece representing two tritons raising a net full of fish near a rock, with a label inscribed, *Labore, et Constantia*.—J. C. BREVOORT.

† In the United States, copies are known to be in the libraries of the Boston Society of Natural History, in the late Dr. DeKay's, in the Astor Library and in my own,—this last a colored one.—J. C. B.